

§102 Rejection of the Claims

Claims 20-21, 23-25, 27-28, 30, 32, 34-35, 37, 39, 41-42, 44, 46, and 48-53 were rejected under 35 USC § 102(b) as being anticipated by Gotou (U.S. 5,001,526).

Claim 20 is amended to further define the claim. Claim 20 recites a trench capacitor formed on a single bonded substrate. As amended, claim 20 recites that the trench capacitor is formed “directly” on the single unbonded substrate. FIG. 5A through FIG. 5M of the present application show one example of the trench capacitor as claimed in claim 29. As clearly shown in these figures, the capacitor is “directly” formed on single unbonded substrate 300.

Gotou discloses methods of forming capacitors such as ones shown in FIG. 2, FIG. 3b, and FIG. 15b. None of the methods described in these figures discloses the “directly” feature of claim 20.

FIG. 2 of Gotou shows a capacitor and a substrate 60. The capacitor includes elements 66, 68, and 69 in which elements 68 and 69 are the electrodes and element 66 is the dielectric of the capacitor. In this figure, the capacitor is formed “not directly” on the substrate but is required to be isolated from the substrate by an isolation region. As shown in FIG. 2 and explicitly stated in column 2, lines 33-34, an isolation 70 is *required* be formed between the capacitor and the substrate. Thus, in FIG. 2, Gotou does not disclose the “directly” feature of claim 20.

FIG. 3b and FIG. 15b of Gotou show a capacitor and a substrate 12. The capacitor includes elements 15, 21, and 22 in which elements 15 and 21 are the electrodes and element 22 is the dielectric of the capacitor. In this figure, the capacitor is formed “not directly” on the substrate but is separated from the substrate by an insulating layer. As shown in FIG. 3b and FIG. 15b, an insulating layer 13 separates the capacitor from substrate 12. Thus, in FIG. 3b and FIG. 15b, Gotou does not disclose the “directly” feature of claim 20.

In light of the reasons presented above, Applicant believes that claims 20 is not anticipated by Gotou. Therefore, Applicant respectfully requests that the rejection of claim 20 be reconsidered and withdrawn and that claim 20 and its dependant claims be allowed.

Claims 25, 41, 49, and 53, as amended, recite elements that are similar to the elements of claim 20. Thus, Applicant also believes that claims 25, 41, 49, and 53 are not anticipated by Gotou for reasons similar to that of claim 20 presented above. Therefore, Applicant requests that

the rejection of claims 25, 41, 49, and 53 be reconsidered and withdrawn and that these claims and their dependent claims be allowed.

Claims 49-56 were rejected under 35 USC § 102(b) as being anticipated by Ho et al. (4,252,579).

Claims 49, 51, 53, and 55 recite trenches, access transistors, and word lines for connecting to the access transistors. As amended, claims 49, 51, 53, and 55 recite that each of the trenches includes “two” word lines. Ho et al. disclose only one word line in each of the trenches. Thus, Ho et al. do not disclose the “two” word lines feature of claims 49, 51, 53, and 55. Therefore, Applicant believes that claims 49, 51, 53, and 55 are not anticipated by Ho et al. Applicant requests that the rejection of claims 49, 51, 53, and 55 be reconsidered and withdrawn and that these claims and their dependant claims be allowed.

§103 Rejection of the Claims

Claims 20-21, 23-25, 27-28, 30, 32, 34-35, 37, 39, 41-42, 44, 46, and 48-53 were rejected under 35 USC § 103(a) as being unpatentable over Gotou (U.S. 5,001,526) taken with Joyner et al. (5,429,955).

Claims 20, 25, 41, 49, 51, and 53 recite a trench capacitor formed on a single bonded substrate. As amended, these claims recite that the trench capacitor is formed “directly” on the single unbonded substrate. As presented in the §102 Rejection of the Claims, Gotou does not disclose the “directly” feature of claims 20, 25, 41, 49, 51, and 53. Joyner et al. do not disclose the “directly” feature of claims 20, 25, 41, 49, 51, and 53. Thus, neither Gotou nor Joyner et al. discloses the “directly” feature of claims 20, 25, 41, 49, 51, and 53. Therefore, Applicant believes that claims 20, 25, 41, 49, 51, and 53 are not anticipated by Gotou, Joyner, or their combination. Applicant requests that the rejection of claims 20, 25, 41, 49, 51, and 53 be reconsidered and withdrawn and that these claims and their dependant claims be allowed.

Claims 22, 26, 29, 31, 33, 36, 38, 40, 43, 45, 47, and 54-56 were rejected under 35 USC § 103(a) as being unpatentable over Gotou (U.S. 5,001,526) and Joyner et al. (5,429,955), as applied above, taken with Kimura et al. (5,177,576).

Claim 55, as amended, recites that the trench capacitor is formed “directly” on the single unbonded substrate. Neither Gotou, nor Joyner et al., nor Kimura et al. discloses the “directly” feature of claim 55. Therefore, Applicant believes that claim 55 is not anticipated by Gotou, or Joyner et al., or Kimura et al., or any of their combinations. Applicant requests that the rejection of claim 55 be reconsidered and withdrawn and that claim 55 and its dependent claim be allowed.

Claims 22, 26, 29, 31, 33, 36, 38, 40, 43, 45, 47, and 54 depend on claims 20, 25, 41, and 53. No combination of Gotou, Joyner et al., and Kimura et al. discloses the “directly” feature of claims 20, 25, 41, and 53 as presented in the §102 Rejection of the Claims. Therefore, Applicant believes that claims 20, 25, 41, and 53 and their dependent claims are not anticipated by any combination of Gotou, Joyner et al., and Kimura et al. Thus, Applicant believes that claims 22, 26, 29, 31, 33, 36, 38, 40, 43, 45, 47, and 54 are patentable and requests that the rejection of these claims be reconsidered and withdrawn and that these claims be allowed.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 373-6969, to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.


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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 23 day of December, 2002.

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